Hovercraft

Build a device that zooms around on a cushion of air!

Kit contains:

- 1 CD or DVD
- 1 plastic bottle cap
- poster putty
- 2 balloons
- 1 nail
- 1 binder clip

You will need: a hammer (optional, but more fun).

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INSTRUCTIONS

Step 1. Poke 4 or 5 holes in the top of your bottle cap with the nail. Can you do it without a hammer? Probably. Is it more fun with a hammer? Yup! (Ask a grown-up for permission.)

Step 2. Stretch the poster putty until it is soft and pliable. Then form it into a thick ring about the same circumference as your bottle cap. Press the putty ring onto the shiny side of the CD or DVD around the center hole. Push the bottle cap into the putty to form a seal.

Step 3. Blow up a balloon. Pinch the neck of the balloon closed with the binder clip to prevent deflation. Then stretch the lip of the balloon over the bottle cap.

Step 4. You are ready to zoom! Place your hovercraft on a smooth flat surface and release the binder clip. Give it a nudge to start it going. Repeat as many times as the balloons allow.

WHAT'S GOING ON?

The air from the balloon escapes downward through the holes in the bottle cap to lift the disc a couple of millimeters off the floor or tabletop. Without direct contact with that surface, friction is greatly reduced. A slight poke is all it needs to overcome inertia and glide. Once the balloon runs out of air, the disc settles back on the floor or tabletop, increasing the friction and causing the hovercraft to stop.

Real-life hovercrafts sit on inflatable cushions of air and are propelled by giant fans instead of finger pokes. They can travel on land or water.

WHAT IS FRICTION?

Friction is the force that resists motion when two objects are in contact with each other. Let's consider two cases: wearing gym shoes on a smooth floor and just wearing socks.

First imagine you are wearing gym shoes. The rubber soles produce friction with the ground so you can run from a complete stop without slipping around. However, if you tried to slide across the floor, your feet would stick in place (and you might fall).

Now imagine you are in socked feet. If you attempt to go from a full stop to running on that smooth floor, your feet scrabble around trying to find a grip before you get any forward motion. However, the reduced friction of socked feet allows you to slide across the floor with great success.